A New Era for Transportation Fuels

Governor Schwarzenegger's Low Carbon Fuel Standard and Other Transportation Initiatives

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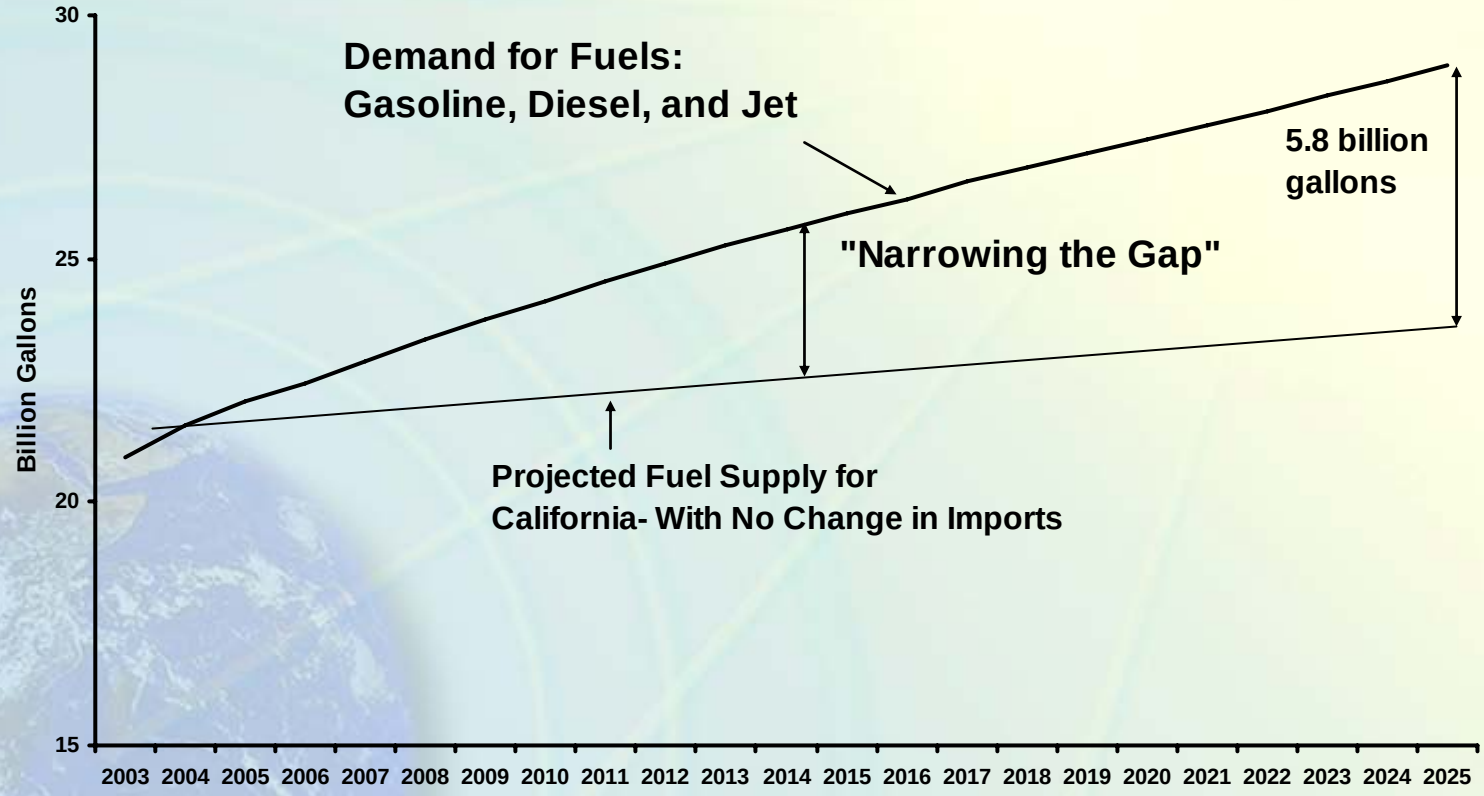
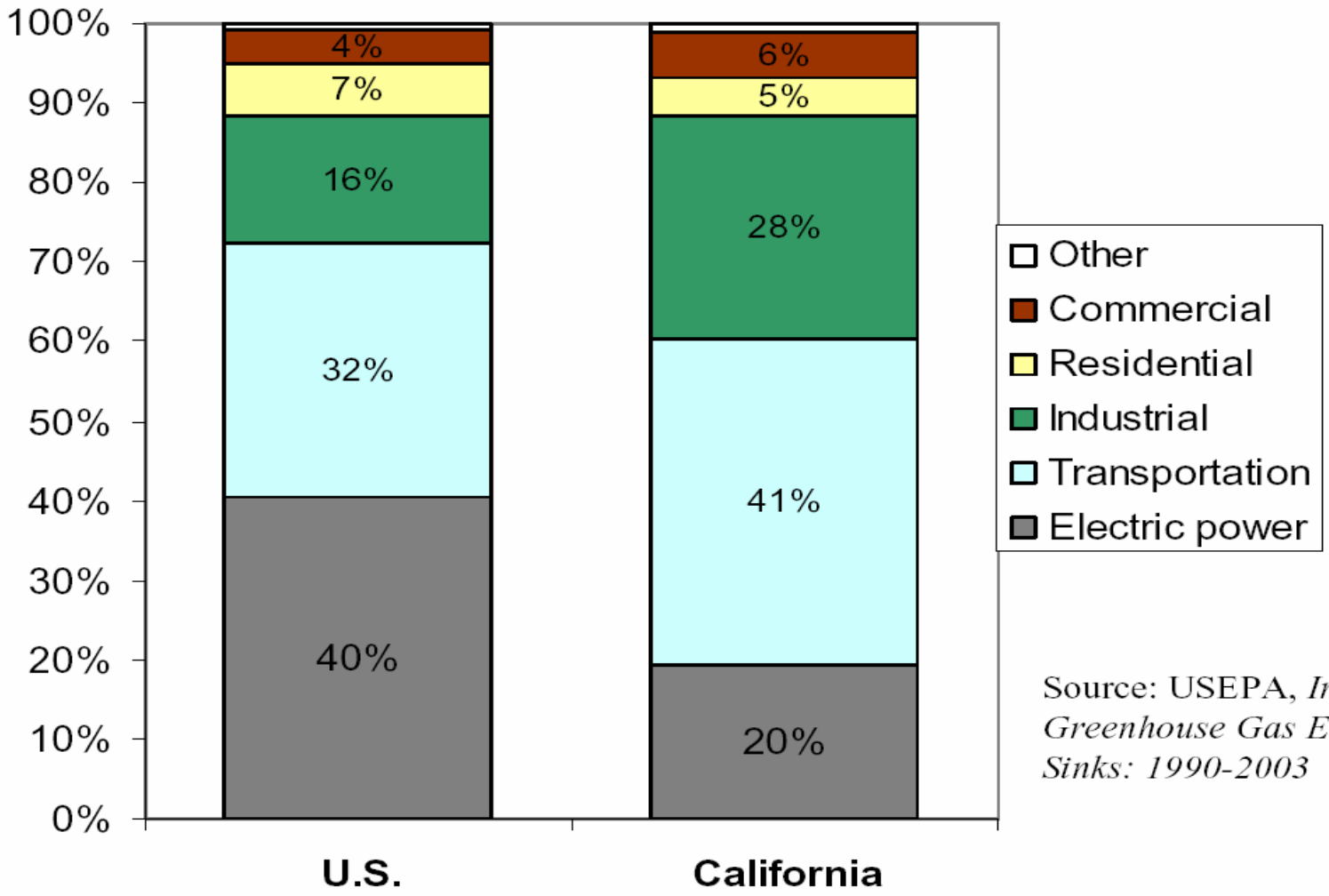
The Nation State Of California

- 5th largest economy in the world
- Population growth:1980-2000: 1.9%, 2000-2020: 1.4% projected
- Population – expected to grow from 36 million now to 45 million by 2025
- Vehicle Miles Traveled: 1980-2000 increased 3.3% per year
- 5th largest consumer of energy in the world
- 2nd largest consumer of gasoline and diesel in the world – only the US consumes more
- Approximately 26 million registered vehicles
- $150 million for gasoline and diesel spent daily

The Heart of the Problem

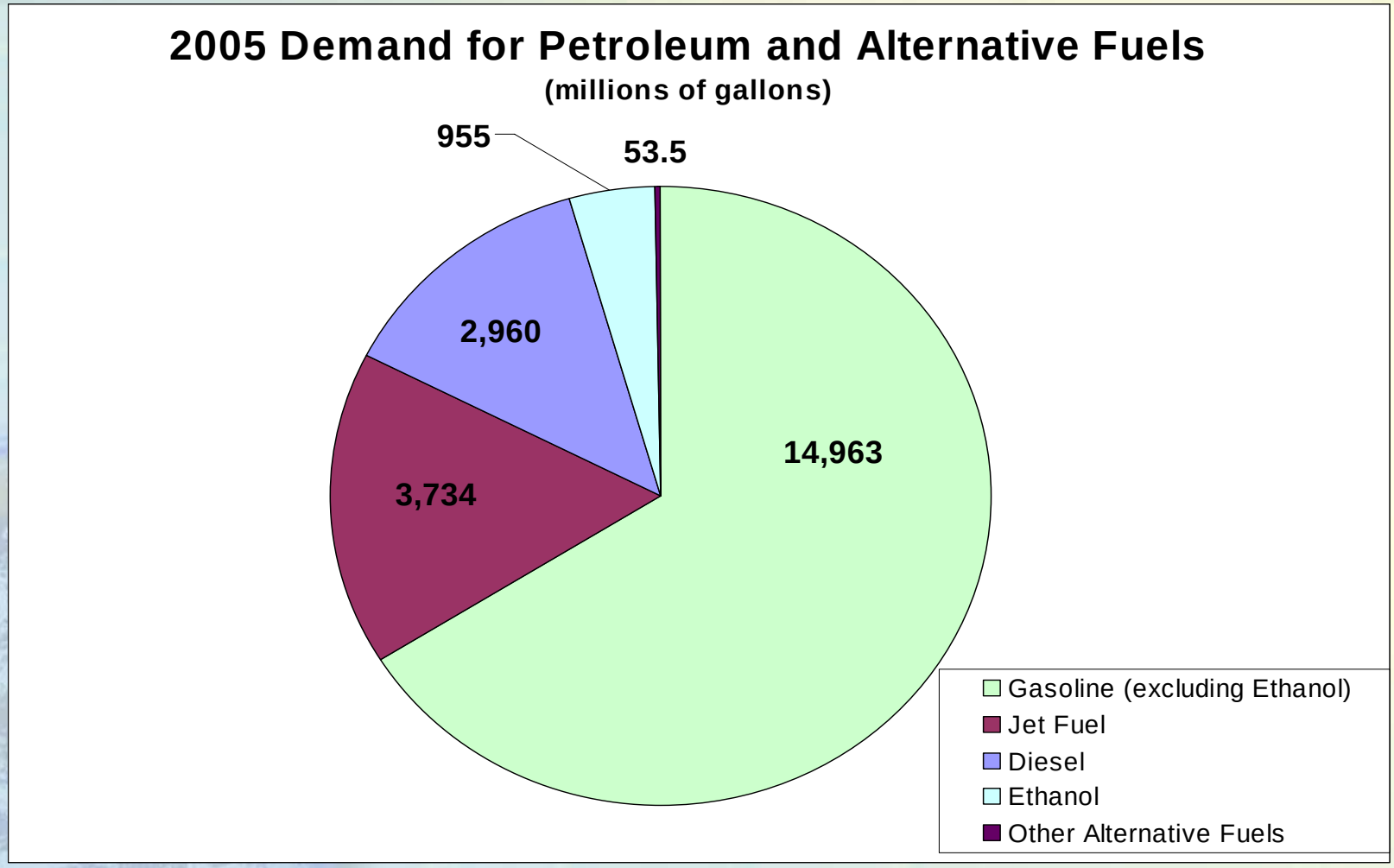


Transportation is a Major Source of Greenhouse Gas Emissions

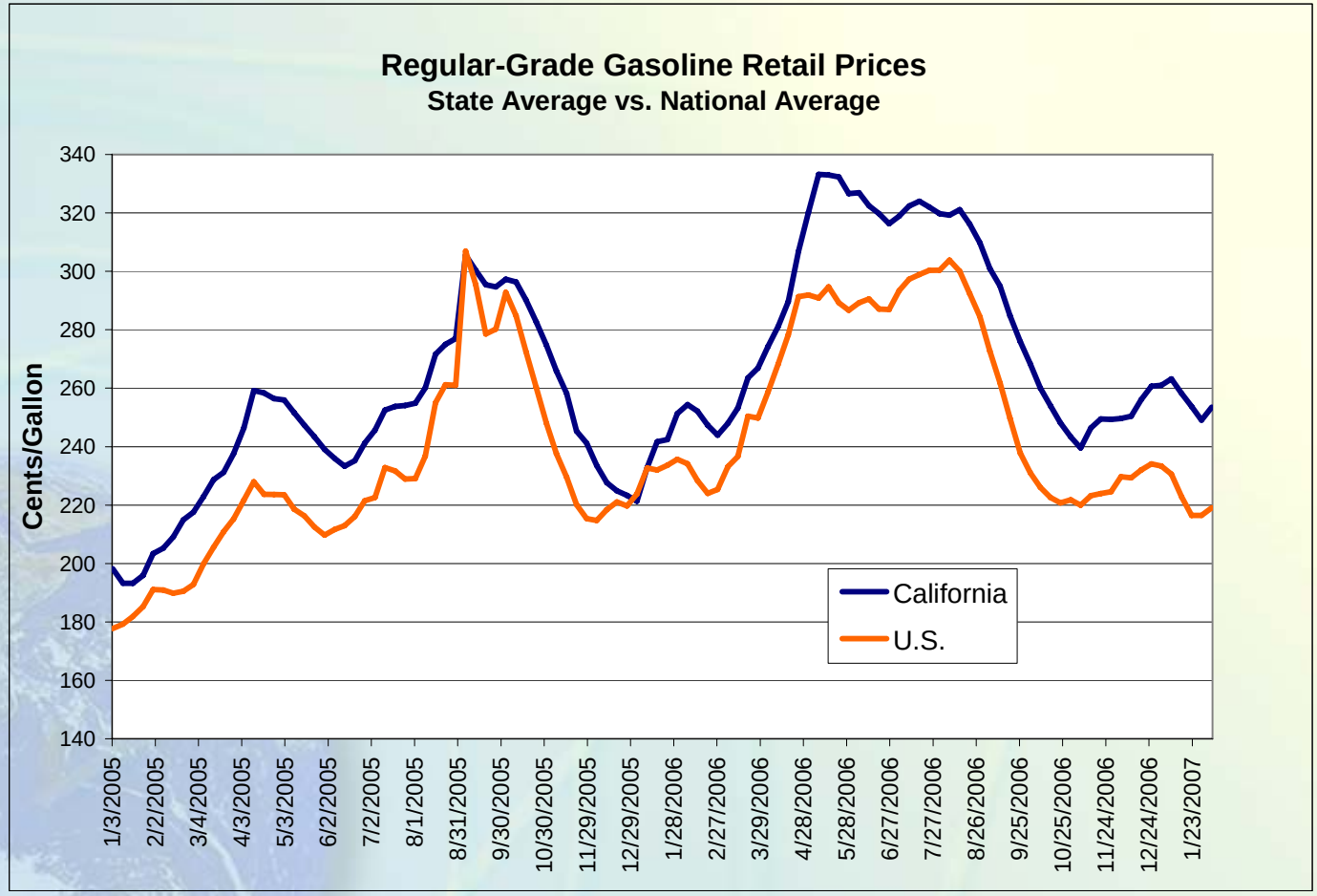


Source: USEPA, *Inventory of US Greenhouse Gas Emissions and Sinks: 1990-2003*

California is Overly Dependent on Petroleum for Transportation



Gasoline Prices are Volatile and Trending Upwards



World's First Greenhouse Gas Fuel Standard

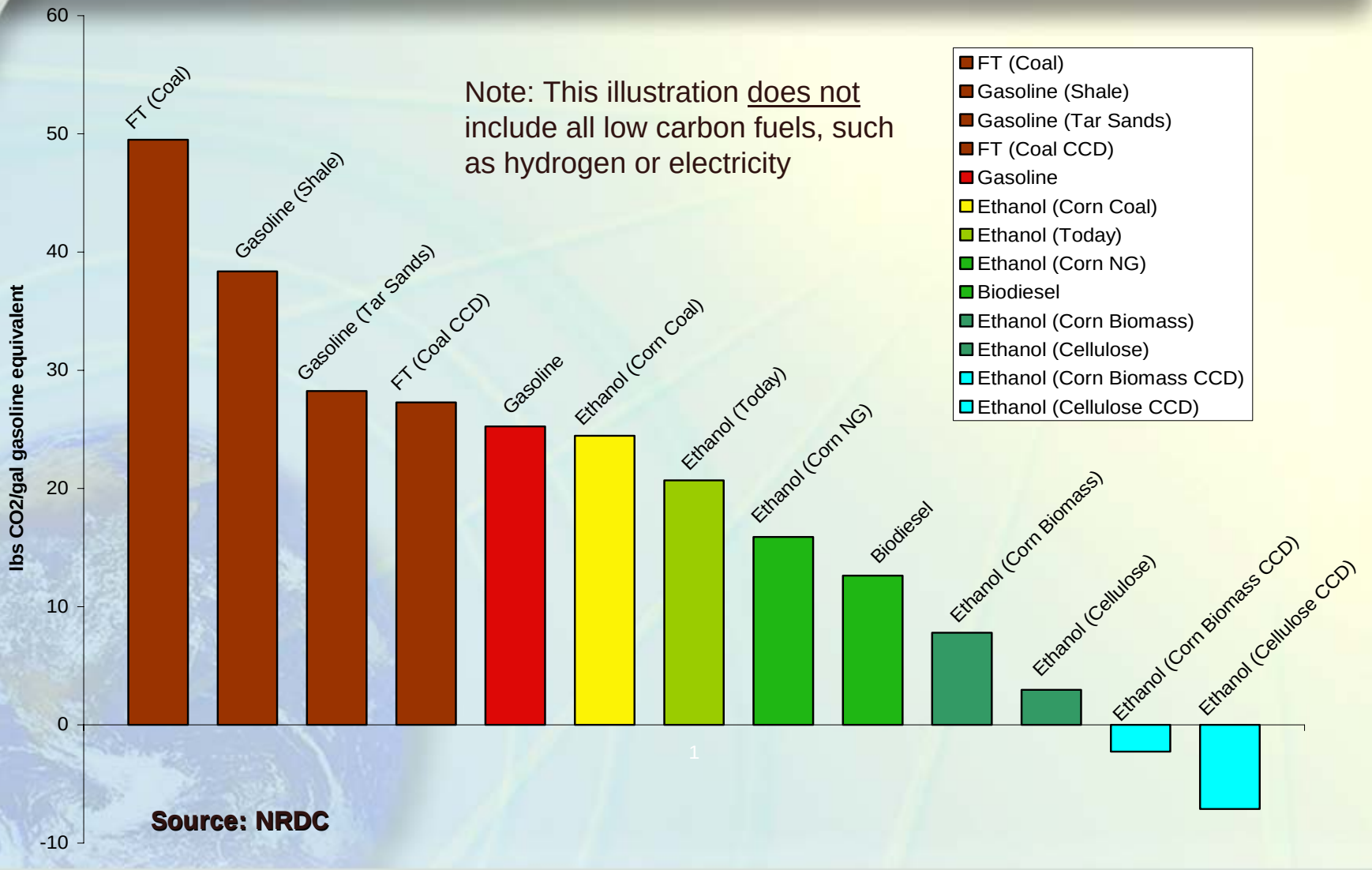
- A statewide goal to reduce the *carbon intensity* of California's transportation fuels by at least 10 percent by 2020

- Goal will be accomplished by establishing a **Low Carbon Fuel Standard** ("LCFS") for transportation fuels sold in California.

The Low Carbon Fuel Standard

- Requires fuel providers to decrease carbon intensity of average annual fuel sales
- Standard measured on a lifecycle basis
- **Performance-based:** allows averaging, banking and trading to achieve lowest cost and consumer-responsive solutions
- **Fuel-neutral:** Fuel providers will choose which fuels to sell and in what volumes

Alternative Fuels are Not Created Equal



Flexible Options for Compliance

Fuel providers will have different options by which to comply, including:

- Blending or selling increasing amounts of lower carbon fuels
- Using previously banked credits
- Purchasing credits from fuel providers who earned credits by exceeding the standard

Examples of Possible Low Carbon Fuel Strategies

- **E10** – Increase blending of ethanol from today's E6
- **E85** – Sell high blend ethanol for use in Flex Fuel Vehicles
- **Low Carbon Ethanol** – "cellulosic" materials have 4 to 5 times lower GHGs than today's corn
- Hydrogen, Natural Gas, Electricity…

Benefits

- **Less Gasoline Consumption:** Displace 20% of gasoline consumption
- **Larger renewable fuels market:** Expand California's alternative fuels markets by 3 to 5 times, while reducing GHG emissions
- **More alternative fuel and hybrid vehicles:** 7 million advanced technology vehicles, more than 20 times current level

Rationale for the Low Carbon Fuel Standard

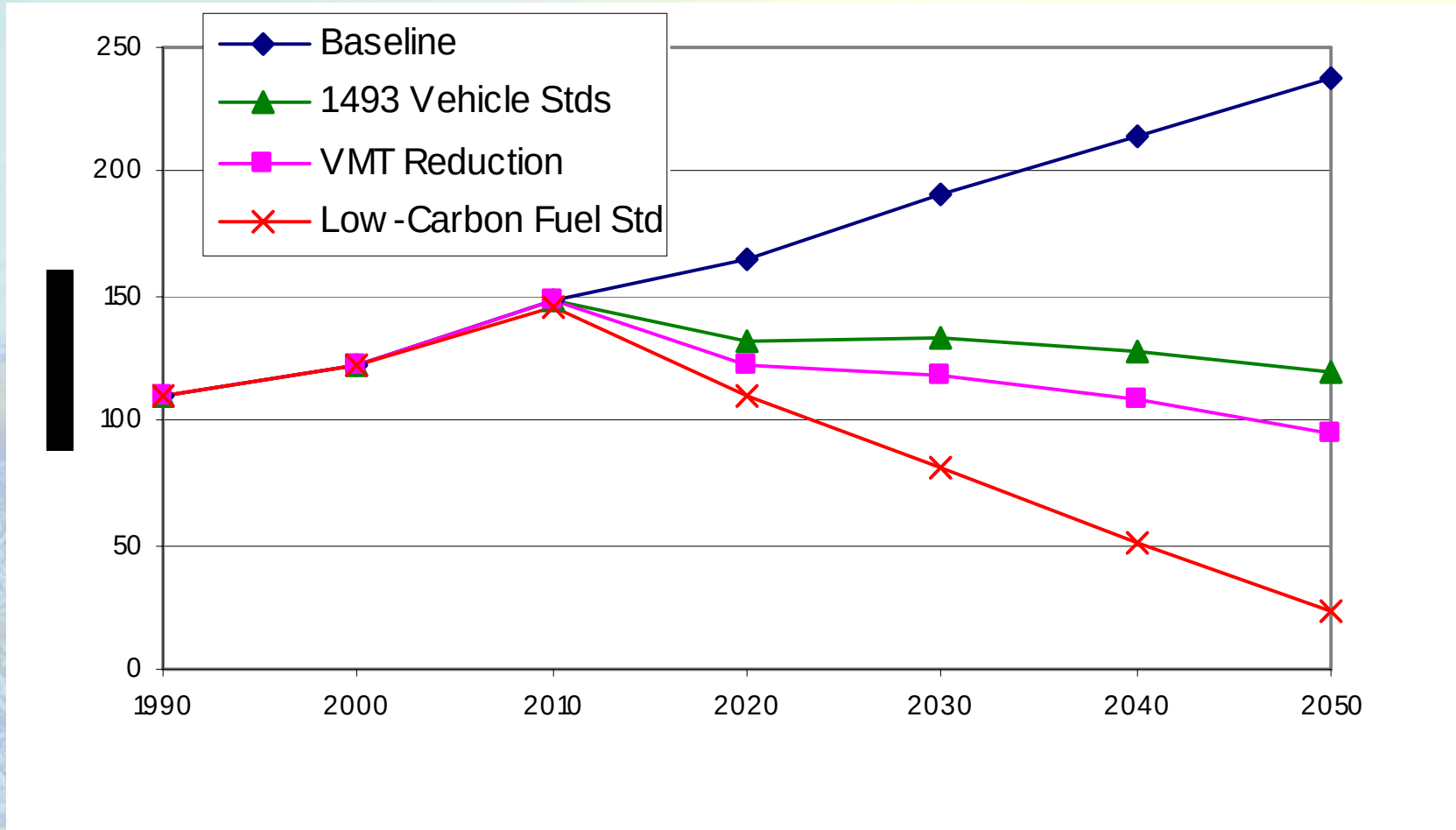
- A statewide cap-and-trade system alone unlikely to create a large enough price signal to induce sufficient, timely investments in new fuel and vehicle technologies
- LCFS creates a substantial, certain market for low carbon fuels and a stable investment environment
- Benefits versus Renewable Fuel Standard
  - ***More flexible*** since it includes electricity, hydrogen, natural gas, etc, rather than just biofuels
  - Ensures greenhouse gas reductions
  - Penalizes the use of high carbon, fossil fuels (coal to liquids)

Other Transportation Initiatives

- Reduces vehicular GHG emissions ~30% by 2016 (California's GHG Tailpipe Standard)
- Possible automaker responses: engine valve technologies, transmissions, integrated starter-generator, efficient A/C, alternative refrigerants (HFC-152a), diesel, hybrids
- Alternative compliance mechanism includes alternative fuels

California's Reduction Strategy for Transportation-related GHGs

Passenger Vehicles CO2 Emissions, End-Use Only



Conclusions

- Confronting Global Climate Change requires a comprehensive approach, using a combination of market-based programs and performance-based standards
- Transportation must contribute its fair share and the three key strategies are: cleaner cars, low-carbon fuels, and reduce travel demand
- Low Carbon Fuel Standard ensures we can meet twin goals of reducing petroleum dependency and GHG emissions